

Agriculture Biotechnology

Course Description:

A course focusing on students examining extensively the relationship between biotechnology and modern plant production systems. Students identify purposes and methods of genetic modification of plants and the impact of modern plant production on a global scale. Classroom and laboratory activities are supplemented through supervised agricultural experiences and leadership programs and activities.

Course Code: 012004

**Endorsements
to teach:** AFNR

Programs of Study to which this Course applies:

Animal Systems
Animal Systems Plus
Plant Systems
Plant Systems Plus

AFNR.HS.2.4	
Apply principles of animal reproduction to achieve desired outcomes for performance, development and/or economic production.	
AFNR.HS.2.4.a	Evaluate animals for breeding soundness and readiness.
AFNR.HS.2.4.b	Apply scientific principles to select and care for breeding animals.
AFNR.HS.2.4.c	Apply scientific principles to breed animals.
AFNR.HS.2.5	
Evaluate environmental factors affecting performance and implement procedures for enhancing performance and animal health.	
AFNR.HS.2.5.a	Design animal housing, equipment, and handling facilities for the major systems of animal production.
AFNR.HS.2.5.b	Interpret government regulations and safety standards for facilities used in animal production.
AFNR.HS.5.1	
Develop and implement a crop management plan for a given production goal that accounts for environmental factors.	
AFNR.HS.5.1.d	Interpret laboratory analyses of plant tissue samples.
AFNR.HS.5.4	
Apply principles of classification, plant anatomy, and plant physiology to plant production and management.	
AFNR.HS.5.4.b	Describe plant parts with regards to basic plant physiological processes.
AFNR.HS.5.4.c	Apply the knowledge of cell differentiation and functions of the major types of cells.
AFNR.HS.5.5	
Propagate, culture, and harvest plants and plant products based on current industry standards.	
AFNR.HS.5.5.a	Choose equipment for use in various crop production systems.
AFNR.HS.5.5.b	Communicate about common machinery and equipment used in plant production today.
AFNR.HS.5.5.c	Utilize technology and equipment for crop production.
AFNR.HS.5.5.d	Describe the process of genetic engineering.
AFNR.HS.5.5.e	Recognize key differences between GMO and Non-GMO crop production methods.
AFNR.HS.5.5.f	Evaluate common traits seed producers breed into new hybrids.
AFNR.HS.5.5.g	Choose appropriate plant propagation methods for various plant species.
AFNR.HS.5.7	
Develop awareness of factors influencing and affected by global plant production.	
AFNR.HS.5.7.a	Describe global production practices.
AFNR.HS.5.7.c	Identify the major challenges of feeding the world.
AFNR.HS.5.7.d	Create a plan to combat hunger in a given area.
AFNR.HS.CR.1	
Describe career opportunities and means to achieve those opportunities in each of the AFNR career pathways.	
AFNR.HS.CR.1.a	Evaluate and implement the steps and requirements to pursue a career opportunity in an AFNR career pathway.

AFNR.HS.CR.1.b	Examine and choose career opportunities that are matched to personal life skills, talents, and career goals in an AFNR pathway of interest.
AFNR.HS.CR.2	
Demonstrate employability skills for college and career readiness.	
AFNR.HS.CR.2.a	Model personal responsibility in the workplace and community.
AFNR.HS.CR.2.d	Synthesize information, knowledge and experience to generate original ideal and challenge assumptions in the workplace and community.
AFNR.HS.CR.2.e	Apply reason and logic to evaluate workplace and community situations from multiple perspectives.
AFNR.HS.CR.2.f	Investigate, prioritize and select solutions to solve problems in the workplace community.
AFNR.HS.CR.2.g	Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.
AFNR.HS.CR.3	
Identify and demonstrate personal financial management and planning.	
AFNR.HS.CR.3.a	Design and implement a personal financial management plan.
AFNR.HS.CR.4	
Identify and demonstrate workplace safety.	
AFNR.HS.CR.4.a	Identify and explain the implication of required regulations to maintain and improve safety, health and environments management systems.
AFNR.HS.CR.4.b	Apply health and safety practices to AFNR workplaces.
AFNR.HS.CR.4.c	Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.
AFNR.HS.CR.5	
Evaluate the nature and scope of the AFNR Career Cluster and the role of agriculture, food and natural resources (AFNR) in society and the economy.	
AFNR.HS.CR.5.b	Identify public policies and examine their impact on AFNR systems.
AFNR.HS.CR.5.c	Examine the components of the AFNR systems and assess their impact on the local, state, national and global society and economy.
AFNR.HS.CR.6	
Identify and demonstrate leadership skills and traits in demand of leadership roles in the agriculture industry.	
AFNR.HS.CR.6.b	Craft SMART goals to achieve by the end of a specific agricultural education course.
AFNR.HS.CR.6.c	Write a career objective.
AFNR.HS.CR.6.f	Write and deliver a speech focused on a currently controversial topic within the agricultural industry while arguing both points of view.